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	Application No.	Applicant(s)
Notice of Allowability	10/720,631	MATHIAS ET AL.
	Examiner	Art Unit	
	Stephen J. Kalafut	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *applicant's paper of 03 August 2006*.

2. ☒ The allowed claim(s) is/are *1-48,51-60 and 62-67*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☐ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This amendment is made for reasons pointed out in applicant's remarks, concerning the incorrect symbols printed in the corresponding Pre-Grant Publication. The errors are in the specification itself, and are thus corrected by this amendment. It should be noted that the numbering of the paragraphs of the specification differs from those of the Pre-Grant Publication.

The application has been amended as follows:

Paragraph 0073 has been changed to read:

--[0073] The first four samples were commercial products from Toray Industries, Inc., Otsu, Shiga, Japan. They are different thicknesses of the same basic material. The last sample was a developmental product from SGL Carbon Group, SGL Technologies, GmbH, Meitingen, Germany.

Data Analysis

The permeance of the diffusion layer can be determined from the WVT data.

$$WVT = S(RH_1 - RH_2) \times [\square]\underline{\Pi}_{Tot} \qquad (1)$$

where

WVT = water vapor transmission rate (g/(s m2))

S = water saturation vapor pressure at test temperature (47322 Pa at 80°C)

RH_1 = relative humidity at source expressed as fraction (1.0 in this method at liquid water surface)

RH_2 = relative humidity at sink expressed as fraction (0 in this method in flowing dry stream)

[□]$\underline{\Pi}$ $_{Tot}$ = total permeance of system including three contributions: water to paper, through paper, paper to dry gas (g/(Pa s m^2))--.

Paragraph 0075 has been changed to read:

--[0075] The total resistance to water transport, R_{Tot}, is the inverse of the total permeance. It includes three resistances in series:

$$R_{Tot} = 1/[□] \ \underline{\Pi}_{Tot} = R_{W,DM} + R_{DM} + R_{DM,G} \qquad (2)$$

where

$R_{W,DM}$ = water vapor transport resistance between water surface and bottom diffusion layer surface ((Pa s m^2)/g)

R_{DM} = water vapor transport resistance due to diffusion layer bulk ((Pa s m^2)/g)

$R_{DM,G}$ = water vapor transport resistance between top diffusion layer surface and flowing dry gas ((Pa s m^2)/g)--.

Paragraph 0076, line 8 has been changed to read:

--[□]$\underline{\Pi}$ $_{DM}$ = permeance of a single diffusion layer (g/Pa s m^2))--.

Paragraph 0076, line 9 has been changed to read:

--[□]δ_{DM} = thickness of a single diffusion layer (m)--.

Paragraph 0079 has been changed to read:

--[0079] A plot of S/WVT v. total thickness of all layers of diffusion media ([□]δ_{DM}) can be used

to extract the resistance of the system, characteristic of the equipment, from the intercept, R_0.

The slope can be used to determine the permeability, π_{DM}.--.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286.

The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.